FIG. 1

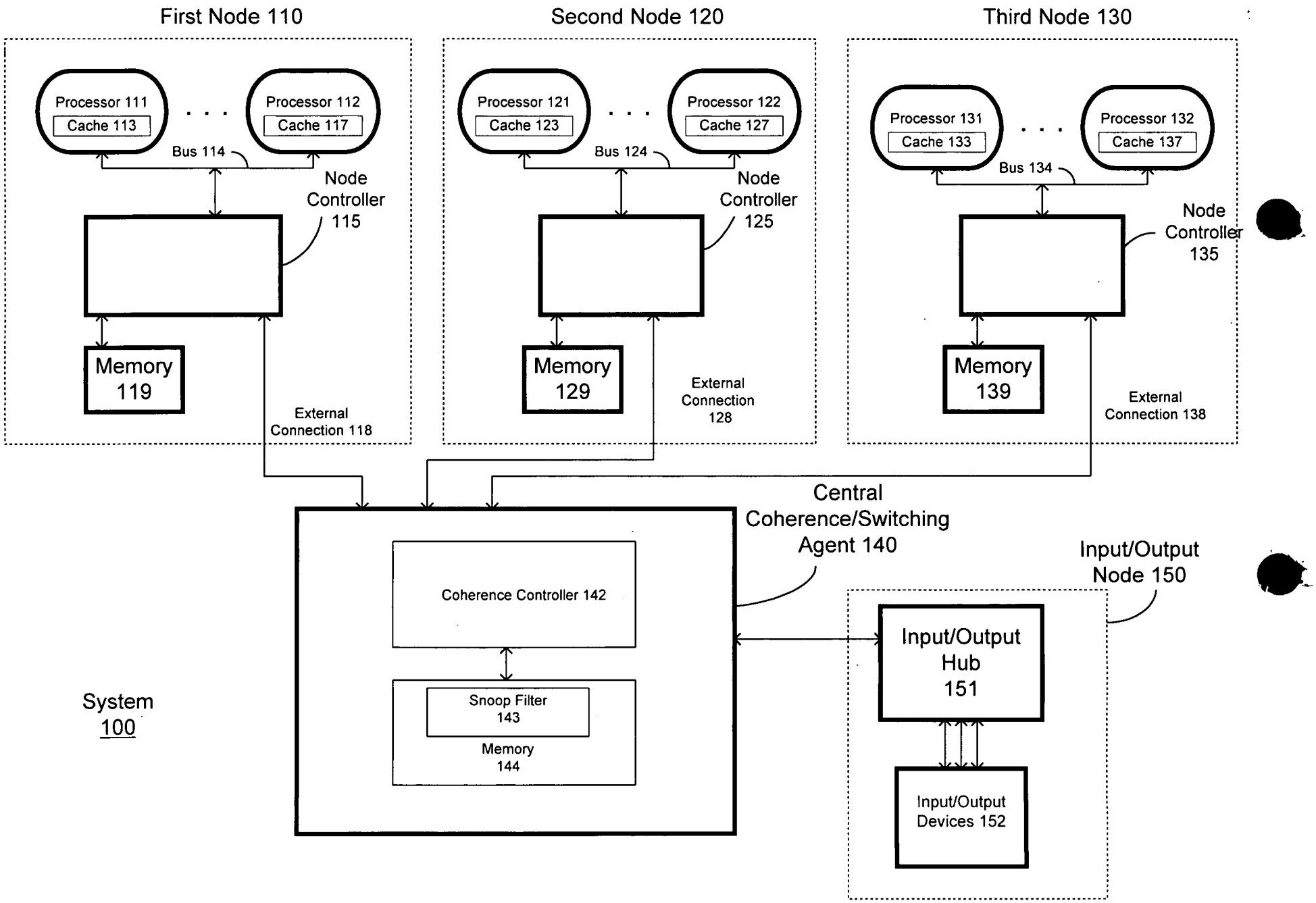
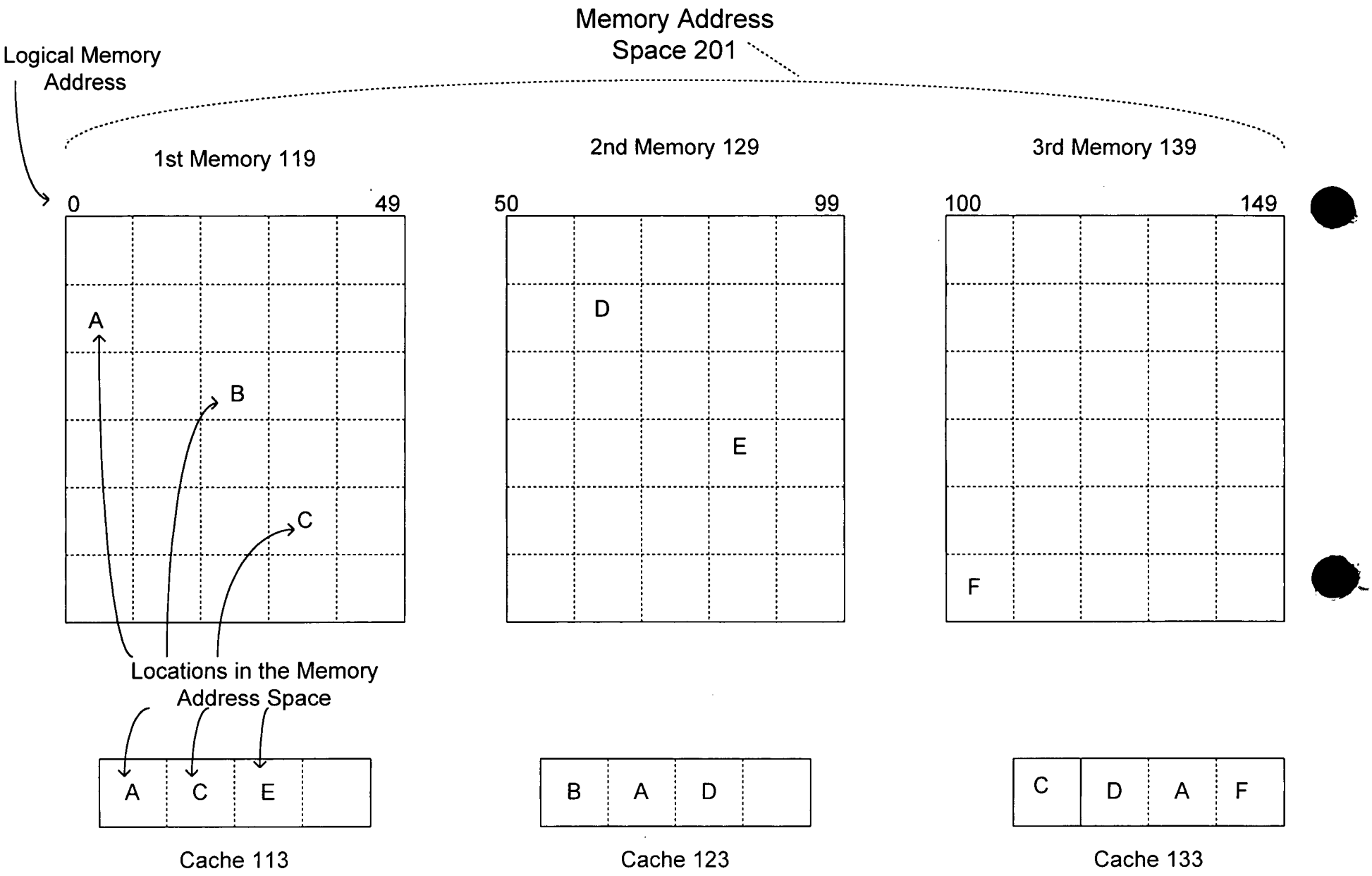

First Node 110
Second Node 120
Third Node 130
Processor 111
Cache 113
Processor 112
Cache 117
Bus 114
Node Controller 115
Memory 119
External Connection 118
Processor 121
Cache 123
Processor 122
Cache 127
Bus 124
Node Controller 125
Memory 129
External Connection 128
Processor 131
Cache 133
Processor 132
Cache 137
Bus 134
Node Controller 135
Memory 139
External Connection 138
Central Coherence/Switching Agent 140
Coherence Controller 142
Snoop Filter 143
Memory 144
Input/Output Node 150
Input/Output Hub 151
Input/Output Devices 152
System 100

FIG. 2


Memory Address Space 201
Logical Memory Address
1st Memory 119
2nd Memory 129
3rd Memory 139
0
49
50
99
100
149
A
B
C
D
E
F
Locations in the Memory Address Space
A
C
E
B
A
D
C
D
A
F
Cache 113
Cache 123
Cache 133

0082CF 0996h260

FIG. 3

Snoop Filter Table

143

301 Memory Address	303 Node/Processor Identifier	304 Caching Status
0	Node X, Processor Y	I, E, or S
10	Node X, Processor Y	I, E, or S
59	Node X, Processor Y	I, E, or S
•	•	•
•	•	•
•	•	•
N	Node X, Processor Y	I, E, or S

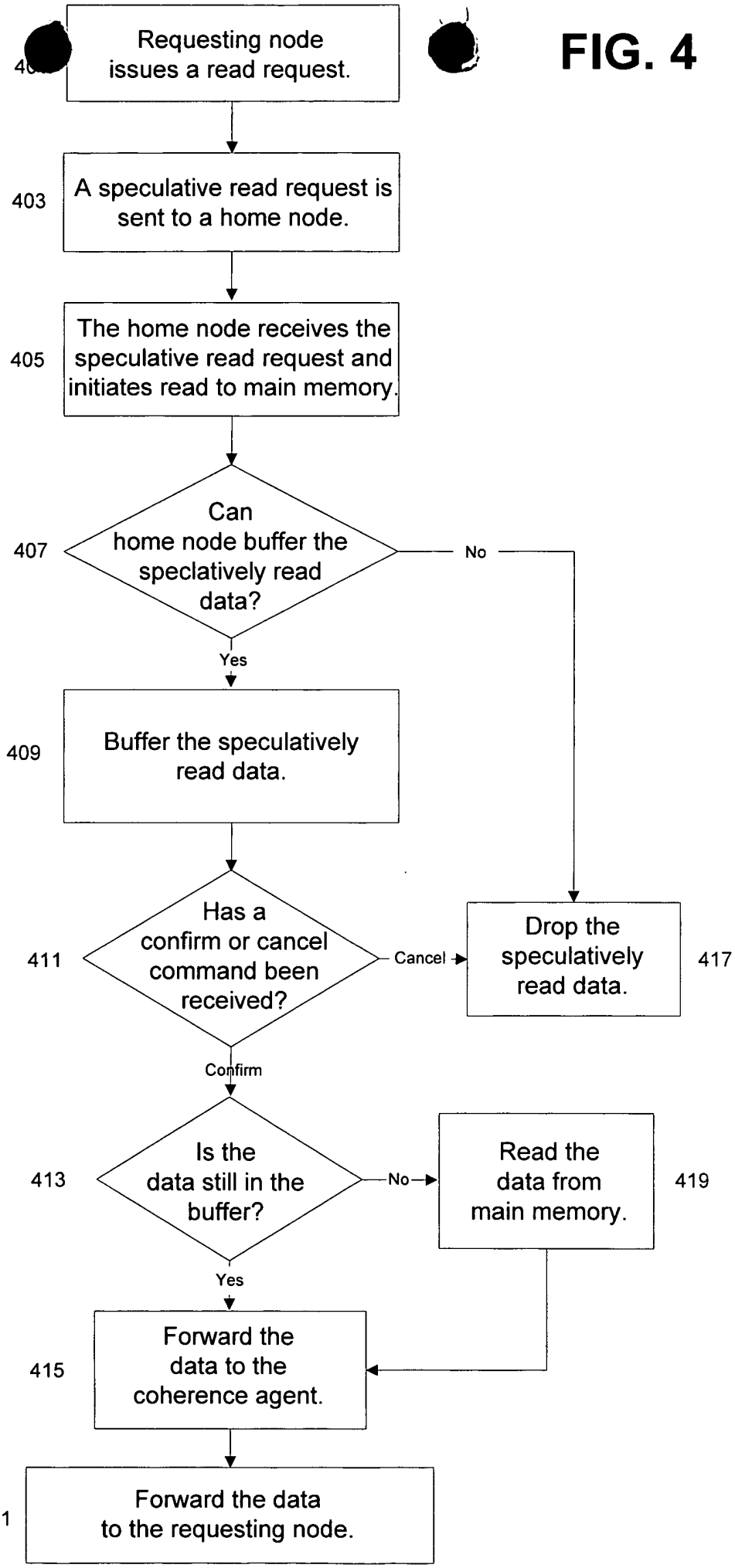
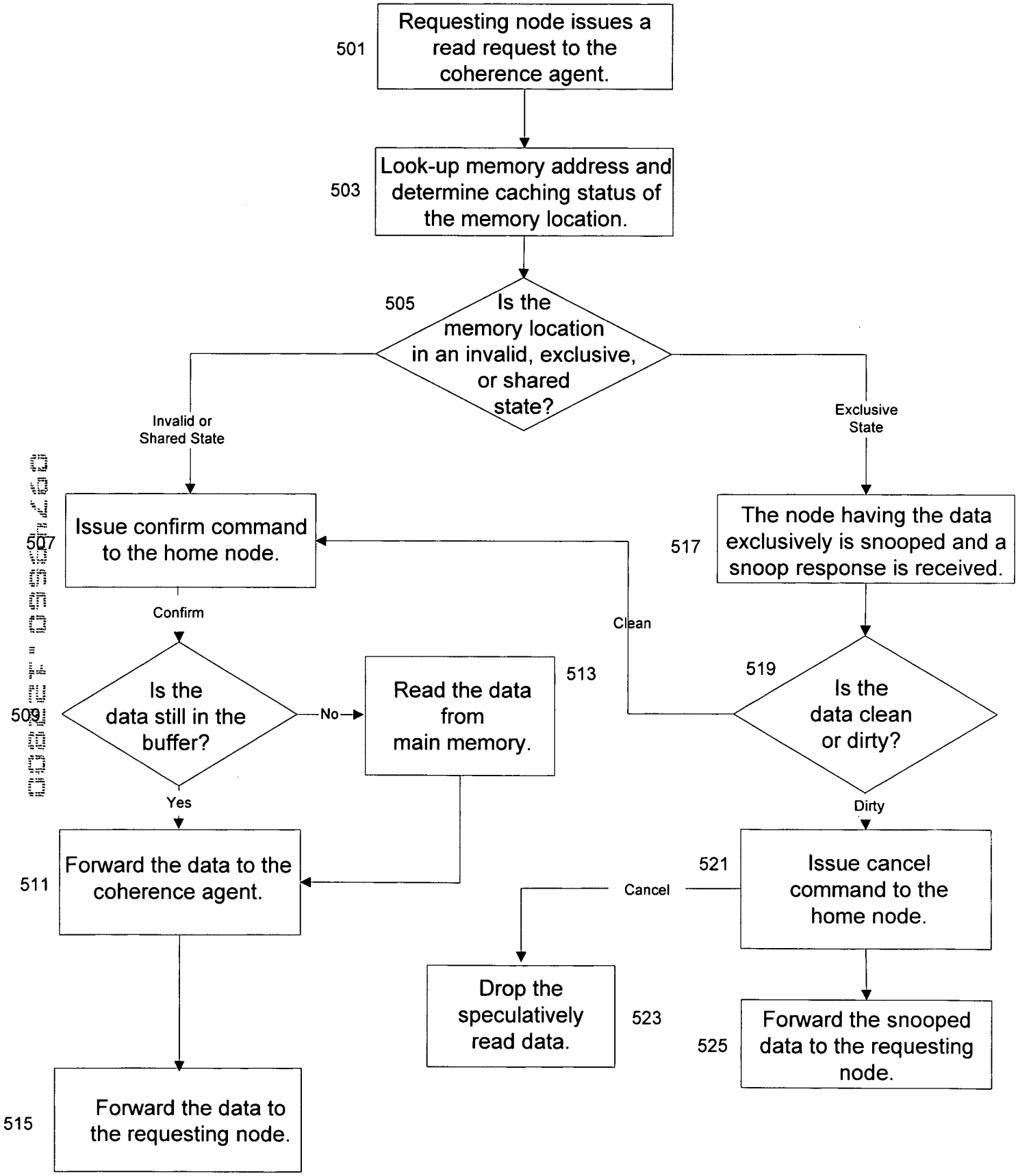


FIG. 4

Docket No. 2207/9865

FIG. 5


501
Requesting node issues a read request to the coherence agent.
503
Look-up memory address and determine caching status of the memory location.
505
Is the memory location in an invalid, exclusive, or shared state?
Invalid or Shared State
Exclusive State
507
Issue confirm command to the home node.
517
The node having the data exclusively is snooped and a snoop response is received.
Confirm
Clean
509
Is the data still in the buffer?
No
513
Read the data from main memory.
519
Is the data clean or dirty?
Yes
Dirty
511
Forward the data to the coherence agent.
521
Issue cancel command to the home node.
Cancel
523
Drop the speculatively read data.
525
Forward the snooped data to the requesting node.
515
Forward the data to the requesting node.